

Research Article

Prevalence of severity, type and dermoscopy of Acne vulgaris



Noha Hassan Moftah¹, Aya Ahmed Hamdy¹ and Lama Abdelnasser Hassaan¹

¹Department of Dermatology & Venereology, Faculty of Medicine; Minia University, Minia, Egypt ¹

DOI: 10.21608/MJMR.2024.309788.1771

Abstract

Background: Acne vulgaris (AV) is characterized as an inflammatory disorder predominantly manifesting on the facial region, chest, upper back, and shoulders as comedones, papules, pustules, nodules or cysts. The diagnosis of acne vulgaris primarily relies on clinical assessment but dermoscope can be good diagnostic tool to detect and evaluate acne lesions. The aim of this study is to describe prevalence of type and severity of acne and dermoscopic features of acne vulgaris, in order to enhance our understanding of acne and to improve its management. **Methods:** Prevalence of severity, pattern and dermoscopic patterns of 24 acne patients were analyzed and photographed.

Results: Regarding severity mild acne patients were (25%) and moderate acne patients were (75%). Comedonal acne was (83.3%) while inflammatory acne was (75%). **Conclusion:** Comedonal acne is more prevalent than papulopustular acne. Dermoscopy is a non-invasive imaging technique, provides valuable insights into the characteristics of acne lesions that helps into better diagnosis and evaluation of acne treatments.

Keywords: Acne vulgaris, comedone, dermoscope, papule, prevalence.

Introduction

Acne vulgaris (AV) is characterized as an inflammatory disorder affecting the pilosebaceous unit of the skin, impacting roughly 9% of the global population ^[1]. Despite being perceived as a benign and self-restricting ailment, acne vulgaris has the potential to induce significant psychological distress and result in disfiguring scars ^[2].

Four interconnected mechanisms play a role in this phenomenon: excessive sebum production, irregular shedding of the epithelial cells lining the hair follicles, colonization of the follicles by *Cutibacterium acnes* (formerly known as *Propionibacterium acnes*), and the subsequent inflammatory response ^[3].

Acne eruptions are commonly observed on the facial region, chest, upper back, and shoulders. The principal acne lesion is the comedone, a result of elevated sebum production and the obstruction of hair follicles by keratin. It

presents as whiteheads (closed comedones) and blackheads (open comedones) ^[4]. The inflammatory process that may occur results in transformation of comedones into inflammatory lesions such as papules and pustules. When inflammation penetrates deeper tissues, it can give rise to cysts and nodules ^[5].

The diagnosis of acne vulgaris primarily relies on clinical assessment. A comprehensive patient history and physical examination are important for identifying possible underlying factors that may contribute to the acne, including medications or hormonal disorders ^[6].

Dermoscopy is a non-invasive imaging technique that allows for the visualization of features within the epidermis and dermis that are not visible to the naked eye. Dermoscopy magnifies and analyzes structures beneath the skin's surface, such as melanin and blood vessels ^[7]. It has traditionally been used to diagnose and differentiate skin tumors, but

recent studies have shown that it can also be used to detect and monitor various inflammatory skin conditions [8].

The aim of this study is to describe prevalence of type and severity of acne and dermoscopic features of acne vulgaris, in order to enhance understanding of acne and to improve its management.

Materials and methods

This study receives an approval from the research ethics committee (approval number: 500/2022). Twenty-four patients were recruited from Dermatology Out-patient Clinic of Minia university hospital in the period from April 2023 to July 2024. All participants agreed to take part in the research and provided written consent.

Patients, who had undergone laser or light therapy on the face, received any systemic or topical treatment within the last 3 months, and had disturbed mentality or psychopathic disorders were excluded from the study.

Each patient underwent a comprehensive evaluation which included obtaining a detailed medical history focusing on the onset and duration of acne lesions, and dermatological assessment was conducted to determine the type

and severity of acne lesions prior to dermoscopic examination. Every lesion was examined both clinically and dermoscopically.

The lesions were examined using the Heine | Delta® 20 PLUS dermoscope from Heine Optotechnik & CO.KG in Herrsching, Germany, provided with LED illumination. Before use, the dermoscope was sterilized with alcohol and then placed on the lesion for examination. Clinical and dermoscopic images were obtained using mobile phone (iPhone 11 pro max camera).

Results

This study included 4 men and 20 women ranging in age from 16–23 with a median age of 19.5. Eight of them were Fitzpatrick skin type II, 10 were Fitzpatrick skin type III, 4 were Fitzpatrick skin type IV and 2 of them were Fitzpatrick skin type V. Duration of acne lesions in patients ranged from 2-8 years, with a median of 5 years (Table 1). Six patients had mild acne, while 18 had moderate acne after assessment with Global acne grading system (GAGS). Six of the patients had non-inflammatory acne only, 4 had inflammatory acne lesions only and 14 patients had both inflammatory and non-inflammatory lesions (Table 2).

Table 1: Demographic data of the patients.

Sex [no. (%)]	
Male	4 (16.7%)
Female	20 (83.3%)
Age (years)	
Range	16-23
Mean ± SD	18.8 ±2.3
Median	19.5
Fitzpatrick skin type [no. (%)]	
Type II	8 (33.3%)
Type III	10 (41.7%)
Type IV	4 (16.7%)
Type V	2 (8.3%)
Duration of acne lesions (years)	
Range	4.6 ±2
Mean ± SD	2-8
Median	5
Severity of acne [no. (%)]	
Mild	6 (25%)
Moderate	18 (75%)

Table 2: Severity and type of acne of the patients before treatment.

Severity of acne [no. (%)]	
Mild	6 (25%)
Moderate	18 (75%)
Type of acne	
Non-inflammatory acne	6 (25%)
Inflammatory acne	4 (16.7%)
Mixed inflammatory and non-inflammatory acne	14 (58.3%)

Primary lesion of acne, comedone, appears under dermoscopic examination as the follicles seem to be enlarged and display either a white-yellow circular shape that represents closed comedone or a brown plug, suggesting the presence of oxidized keratin of open comedone (Fig.1).

Papule may appear under dermoscopic examination as erythematous to brown circular lesion. This occurs as a result of local inflammation in the affected site (Fig.2).

On the other hand, pustules are characterized by a central white-yellowish area that represents the accumulation of purulent material within the lesion's cavity (Fig.3).

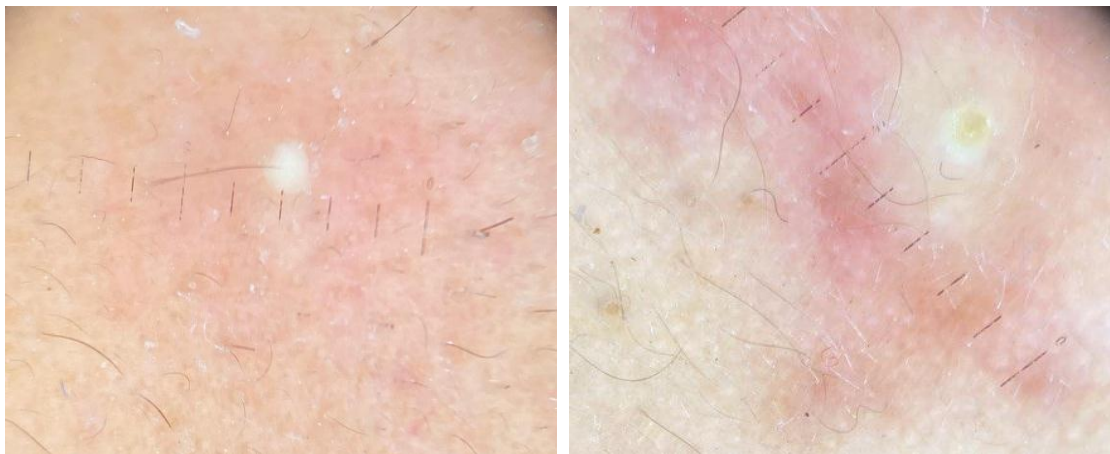


Fig. 1: Dermoscopic picture of closed comedone (A), open comedone (B)

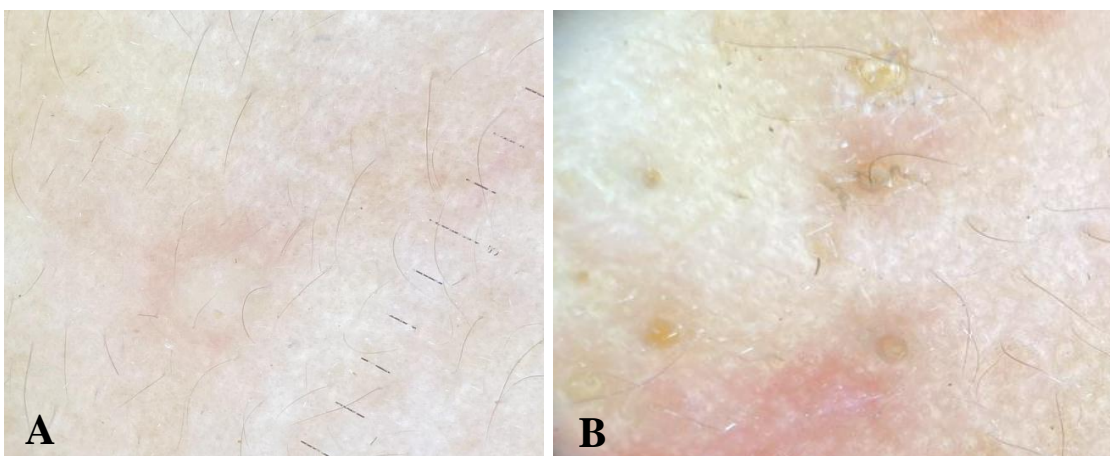


Fig. 2: Dermoscopic picture of papules



Fig. 3: Dermoscopic picture of pustules

Discussion

Acne vulgaris is a prevalent and often disfiguring inflammatory condition affecting the pilosebaceous unit. Contrary to the belief that acne is merely a temporary issue of adolescence, it is recognized as a chronic condition. The negative consequences of acne, including anxiety, depression, social isolation, scarring, and lasting hyperpigmentation, significantly affect both individuals and the healthcare system^[9].

The prevalence of acne shows considerable variation across different research studies, primarily because of differences in clinical characteristics and the methodologies employed, including interviews and/or clinical evaluations performed by dermatologists^[10].

Prevalence of mild acne in this study was 25%, while moderate acne was 75%. In this study, the prevalence of non-inflammatory lesions (comedones) was 83.3%, and the prevalence of inflammatory lesions (papules and pustules) was 75%.

In study by Dréno et al., (2015), most women had both inflammatory and non-inflammatory acne lesions, with just 6.4% having only inflammatory lesions and 17.1% having only comedonal acne^[11]. However, Duquia et al., (2013) reported that the prevalence of non-

inflammatory lesions (comedones) was 67.6%, and the prevalence of inflammatory lesions (papules and pustules) was 68.0%^[12].

In opposite with the current study, Sharma et al., (2017) revealed that acne was mild in most of the students (81.9%), followed by moderate and severe acne (18.1%)^[13].

On reviewing literature, previous studies used dermoscopy as a diagnostic tool for acne vulgaris and our results agree with same features found in these studies^[8, 14, 15].

Conclusion

This study revealed higher prevalence of the comedonal form of acne than papulopustular form. Dermoscopy, a non-invasive imaging technique, provides valuable insights into the characteristics of acne lesions. This technology can assist healthcare professionals in the early detection of new lesions, thereby enhancing the timing and efficacy of treatment interventions.

References

1. Eichenfield DZ, Sprague J, Eichenfield LF. Management of acne vulgaris: a review. *Jama*. 2021;326(20):2055-67.
2. Leung AK, Barankin B, Lam JM, Leong KF, Hon KL. Dermatology: how to manage acne vulgaris. *Drugs in context*. 2021;10.

3. Ogé LK, Broussard A, Marshall MD. Acne vulgaris: diagnosis and treatment. *American family physician*. 2019;100(8):475-84.
4. Tuchayi SM, Makrantonaki E, Ganceviciene R, Dessinioti C, Feldman SR, Zouboulis CC. Acne vulgaris. *Nature reviews Disease primers*. 2015;1(1):1-20.
5. Hayashi N. Clinical Features and Differential Diagnosis of Acne Vulgaris. *Acne: Current Concepts and Management*. 2021:159-67.
6. Ak M. A comprehensive review of acne vulgaris. *J Clin Pharm*. 2019;1(1):17-45.
7. Srivastava R, Manfredini M, Rao BK. Noninvasive imaging tools in dermatology. *Cutis*. 2019;104(2):108-13.
8. Alma A, Sticchi A, Chello C, Guida S, Farnetani F, Chester J, et al., Dermoscopy, Reflectance Confocal Microscopy and Optical Coherence Tomography Features of Acne: A Systematic Review. *Journal of Clinical Medicine*. 2022;11(7):1783.
9. Uhlenhake E, Yentzer BA, Feldman SR. Acne vulgaris and depression: a retrospective examination. *Journal of cosmetic dermatology*. 2010;9(1):59-63.
10. Bagatin E, Timpano DL, Guadanhim LRdS, Nogueira VMA, Terzian LR, Steiner D, et al., Acne vulgaris: prevalence and clinical forms in adolescents from São Paulo, Brazil. *Anais brasileiros de dermatologia*. 2014; 89(3):428-35.
11. Dréno B, Thiboutot D, Layton A, Berson D, Perez M, Kang S, et al., Large-scale international study enhances understanding of an emerging acne population: adult females. *Journal of the European Academy of Dermatology and Venereology*. 2015; 29(6):1096-106.
12. Sharma RK, Dogra S, Singh A, Kanwar AJ. Epidemiological patterns of acne vulgaris among adolescents in North India: A cross-sectional study and brief review of literature. *Indian Journal of Paediatric Dermatology*. 2017;18(3).
13. Duquia RP, de Almeida Jr HL, Breunig JA, Souzat PR, Göellner CD. Most common patterns of acne in male adolescents: a population-based study. *International Journal of Dermatology*. 2013;52(5):550-3.
14. Lacarrubba F, Ardigò M, Di Stefani A, Verzì AE, Micali G. Dermatoscopy and reflectance confocal microscopy correlations in nonmelanocytic disorders. *Dermatologic Clinics*. 2018;36(4):487-501.
15. Alfaro-Castellón P, Mejía-Rodríguez SA, Valencia-Herrera A, Ramírez S, Mena-Cedillos C. Dermoscopy distinction of eruptive vellus hair cysts with molluscum contagiosum and acne lesions. *Pediatric Dermatology*. 2012;29(6):772-3.